

*Strategic Systems Solutions*

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**A Wealth of Experience**  
You Can Bank on Us





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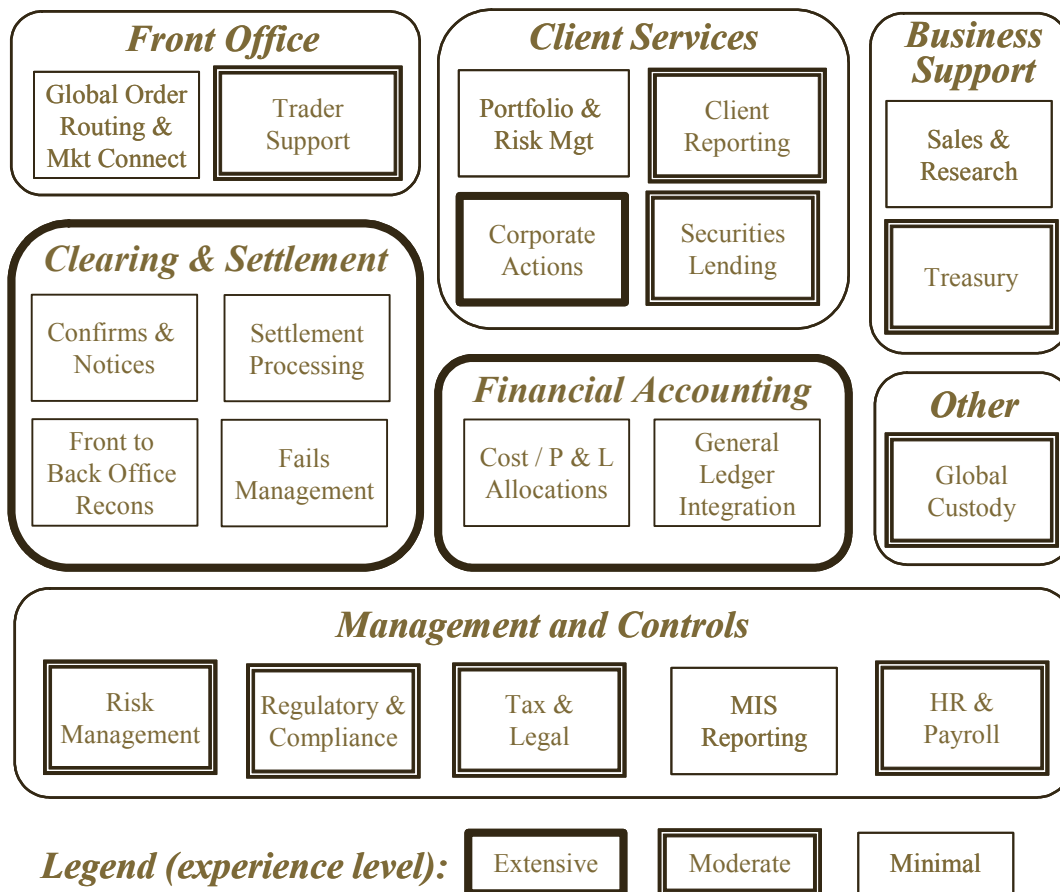
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## Introduction

At Strategic Systems Solutions, we provide leading information technology consultancy to the investment banking marketplace. We are uniquely positioned to address the technology requirements of your entire financial services enterprise; efficiently, with flexibility, and on a global scale. Our proven experts are highly skilled at solving the complex software application and multi-platform information technology challenges inherent in today's large scale transaction processing environments. An innovative location strategy featuring offices nearby the major financial centres of the UK, US, and China ensures superior, cost-efficient partnering with our clients.

Our consultants have worked in most areas within an Investment Bank and in support of most products. Our most extensive experience can be found in the areas of clearance and settlement, financial accounting, and corporate actions. We also have expertise in trader desktop support, securities lending, regulatory & compliance, tax, legal, and MIS reporting. In this document, we will walk through these areas and describe the projects, technologies utilized, and the client.





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## *Clearance & Settlement*

We provide leadership and support for clearance and settlement activities for various blue chip Investment Banks.

### **eSpear - Global Reengineering Project**

We have been a partner in the design, development, and rollout of the global settlements application, eSpear. The application performs straight through processing of more than 800,000 trades per day for London, New York, Australia, Tokyo, and Hong Kong (which also supports Singapore, Malaysia, Philippines, Thailand, Indonesia, Shanghai, Shenzhen, and Taiwan). There are over 1,100 global users and more than 100 interfacing systems.

eSpear was initially deployed for the cash equities business in London in mid-2000. After the success of that release, various other business lines have been brought online including: cash trading, prime brokerage, program trading, stock borrow loan, index arbitrage, convertibles, arbitrage, and money markets.

### **Functionality Supported**

Specific clearance and settlement functionality that is either led or supported by our consultants include trade management, trade life-cycle management, confirms, trade calculations, data products, static data, and production support. Within the static data team, we have been working to centralize data entities and data attributes and reduce dependencies on legacy applications. This effort has included settlement instructions, accounts, and FTI data entities.

### **Technologies Utilized**

The eSpear platform has been built to support very high transaction volumes, a diverse user base, and global processing requirements. The result is an integrated, event-driven, exception based platform built with the following technologies: J2EE, Websphere, Sun Solaris, Oracle, C++, Corba, Mercator, Test Director, WinRunner, and Load Runner.

As with any global financial services platform, various communication methods have been utilized including SWIFT, EUROCLEAR, CCASS, and proprietary flat files.

### **Our Involvement**

We have more than 145 consultants working with our client to produce and extend the eSpear product. Our roles include:

- component management and business analysis
- technical architecture design
- software design and development
- database administration
- test management and execution
- automated deployment
- production support
- project management office and resource management.

Besides the information provided in this section, we have also created an eSpear Overview document and a Project Profile for the eSpear Production Support work that we perform. The overview document can be found on our website ([www.sssworldwide.com](http://www.sssworldwide.com)) and the profile is found in the Appendix section of this document.



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## **Equity & Derivatives Reconciliation System – Production Support**

Clearing and settlement processing at a large investment bank will necessarily involve the integration of several different front-office and back-office systems. In this complex environment, it is critical that the different systems work together properly. It is for this requirement that reconciliation systems are created.

### **Scope of the System**

From our Horsham, Pa. US office, our systems engineers support a front-to-back-office reconciliation system. The application supports a wide range of securities ranging from simple equities and options to convertible bonds and complex derivatives. It operates both at the position level and at the trade level, comparing eight front-office systems against two back-office systems.

The position-level reconciliation measures the total number of shares by security and account. On a typical night, the position reconciliation processes over 500,000 records. For example, 400,000 front-office positions will be compared against 160,000 back-office positions.

The trade-level reconciliation compares each individual trade and will typically process more than 900,000 transactions. On average, 230,000 front-office trades are compared against 680,000 back-office trades.

### **Data Sources & Technologies Utilized**

Our system incorporates data from various front-office and back-office systems including Imagine, Brass, Fidessa, ADP, and Rolfe & Nolan. The application interfaces with several different technologies in order to obtain the source data including Sybase and Oracle databases and text files in various formats.

The application's scripts are written in Perl and they execute a complex matching process to identify securities and to pair up records between the front office and back office. These reconciliation scripts produce output that our users can access in various formats. Most users see their results in web pages, using Perl scripts to select data from our Sybase database, but we also produce some specialized reports as Excel spreadsheets, plain text files, or records inserted into other databases.

### **Flexible Application**

The hallmark of our front-to-back-office reconciliation system is flexibility. The application interfaces with diverse systems both upstream and downstream and then finds common ground in records originating from vastly different formats. Our reconciliation system is able to overcome these differences to produce an integrated solution.



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## *Front Office*

Probably the most intense and volatile area of an investment bank is the Front Office. Through the years, we have provided daily support and maintenance to this group for several trading, trade support, and risk management applications. In addition, we have also provided 24X7 market data support.

### **Trader Support Systems - Daily Support & Maintenance**

We support a range of applications utilized by traders, operations personnel, controllers, and compliance to manage the firm's daily trading activity. We have consultants based both in the US and the UK supporting these applications.

### **Order Management System (OMS)**

OMS allows the entry, monitoring, amendment, cancelling, forwarding, booking and allocation of orders, as well as the recording of executions. The application is used by hundreds of internal traders and external clients that are based in London, New York, Boston, Sydney, Hong Kong and Madrid. It is continually enhanced and rolled out to additional users. Order types that are supported include cash and derivatives (options, futures and cash hedges) Indications of Interest (IOIs), and FX trades.

This optimised, Java Swing based application is both complex and feature rich. Our five person GUI team is responsible for adapting OMS to a new framework that supports rapid development and regional modularity. On an ongoing basis, the team is expanding OMS to cover US, derivative and further foreign and domestic requirements. This team is based in our Leeds office.

### **Fidessa**

Our four-person team is involved in all aspects of Fidessa system development, from front-end client applications to server processes and configuration. We also support the interfacing and integration of custom systems into the Fidessa environment. Our team is based in the SSS Nottingham office in the UK. In this application support role, the team utilizes various technologies and databases including UNIX, Sybase, Oracle, VB, Java, C/C++ and TCL.

### **Program Trading Support**

Our Program Trading team moved "off-shore" from our client's London office to the SSS Newcastle office, early in 2003. The four person team provides support through a "hotline" number from 7am to 6 pm weekdays, along with on-call support. Primary responsibilities include the support of the Imagine and Global Equities Management System (GEMS) applications. Imagine is a real-time derivatives portfolio and risk management system for listed and OTC securities that is used by the Program Trading area to capture securities and pricing information. GEMS is a proprietary order-processing system used by the Program Trading Desk to manage its trade activity.

Day to day work includes setting up new traders, portfolios and holdings, correcting pricing, broker, and Profit and Loss (PnL) errors and supporting manual trade entries, trade and tax amendments. Other tasks include monitoring system performance, creating and maintaining reports, performing archiving, the creation and maintenance of feeds to other departments and responding to ad-hoc enquiries. The technologies utilized include Unix, Unix scripting languages, Perl, SQL, Java and C++.

### **Equity Trade Operations Retrieval System**

From our Horsham, Pa. US office, we provide support and maintenance for the Equity Trade Operations Retrieval system, eTors. The application allows trade operations personnel to review listed trades that were booked the prior day by various source systems. This application extracts trade information from various client and vendor front and back-office systems including the Equity Order Management System, NYFIX, and Fidessa.



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At the end of each business day, trade data from each source system is uploaded to a production server via Perl scripts. This data is then scrubbed and formatted by PL/SQL scripts as it is loaded into an Oracle database. Users see their results displayed on web pages through J2EE.

The eTors database is heavily utilized for report generation. There are a wide variety of reports which are created bi-weekly, monthly and annually for operations and controlling staff as well as traders who require documentation on their daily trade activity. These reports also assist the compliance department in trade tracking and inquiries.

### **North American Equities Error Tracking System (eTrk)**

We provide daily support and maintenance for the North American Equities Error Tracking System from our Horsham, Pa. US office. This web based application provides each Equity Trading Desk with the ability to track and update erroneous trades booked on the trading floor each day. The application handles a wide range of account types, clients, and products including equities, options, convertibles, and derivatives. The application, which is written in J2EE and Oracle technologies, is a fully automated data entry and reporting tool.

### **Soft Dollar Invoice and Commission Tracking (SoftD)**

We developed and now maintain the SoftD application, which is a web based repository for tracking vendor invoices. It is also a reporting interface for reconciling invoices against money manager commissions. The Soft Dollar system utilizes two separate databases. The first database tracks all invoices entered by operations staff against payments received by financial institutions, such as Fidelity, Credit Suisse Asset Management, John Hancock, etc. The second database supports commission reporting from those financial institutions which are reconciled in the first database.

This web-based application is written in Perl/CGI and supported out of our Horsham, Pa., US office. These scripts produce output in various formats, with the majority of our users viewing their results via web pages. Data is retrieved from an Oracle database, but users also have the ability to post their data to Excel spreadsheets for manageability.

### **Market Data – Daily Support**

Our near-shore, Newcastle, UK based, team provides 24 x 7 support for market data to our Investment Banking client. The team provides application development and support for a globally replicated Sybase database of referential market data. This repository contains a wide range of financial instruments and data vendors including Reuters, Bloomberg, S&P, DTC, JJ Kenney, and OCC.

We have designed and developed several loader products to process data feeds for equity indices and the Options Clearing Corporation. We provide on-call support on weekends, overnight, and for critical market events, such as index rebalancing and options expirations. Our batch process is run utilizing Autosys and is linked to NetCool alarms, and email and beeper notifications.

Additional information about this engagement can be found in the Appendix of this document.

### **Trades Risk Management – Systems Development**

We created a Trades Risk Management system that was used for monitoring and managing trader's risk. The application linked a distributed front-end to a mainframe database using asynchronous 3-tier architecture. Risk Managers were able to monitor and then at the end of the day sign-off trade risks.

The technologies utilized in this implementation included Perl 5, Sybase, MQ Series, and Adabas/Natural.



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## *Financial Accounting*

Our consultants provide day-to-day support for Controllers and the General Ledger at two different Investment Banks. We have also provided the General Ledger integration support for several bank mergers and branch consolidations at a large financial institution.

### **Profit & Loss Calculations – Daily Support**

We support all applications, data, and reporting required by our client's Cash Equity Controllers from our Horsham, Pa, US office. Our application receives data from Fidessa, Brass, ADP, and eSpear, an internal client system, through our customized nightly job applications.

The system was developed using Microsoft technologies and an Oracle 8 database. The database stores trade level and aggregated data for our daily and historical reporting purposes. Using this specialized table design and packaged functions/stored procedures, our controlling group is able to report the data in many ways, from categorization to historical aggregation.

### **Flexible Reporting Tools**

We designed an intranet based system for our users to review reports and enter ad-hoc updates. When more flexible reports are needed, we create customized Microsoft Excel and Access databases with special Visual Basic data access code to retrieve and manipulate data stored in Oracle. Our Access reporting tool is able to link and process Access databases created from other groups up to 1Gigabyte in size. This environment gives our users flexibility to control their data in a standardized environment without using difficult reporting tools.

One of our most complex tools is the front to back office reconciliation system. This utility compares front office and back office trades over the course of Daily, Month to Date, and Year to Date time frames. After processing, this utility creates a break report with drill down features to examine errors at either the trade level or position level.

### **General Ledger – Daily Support & Integration**

As part of the client's Global Finance team, our consultants provide daily support and management of their General Ledger. We are responsible for responding to requests from users for ad-hoc reports and data. We also migrated several branch offices onto the new General Ledger and supported the effort to combine the General Ledgers after the two banks merged. All work is performed utilizing Natural, ADABAS, Cobol, and CICS.

A detailed Project Profile describing this effort can be found in the Appendix of this document.

### **North American Equities Floor Brokerage – Daily Support & Maintenance**

We provide daily support and maintenance for the North American Equities Floor Brokerage application for our client from our Horsham, Pa. US office. This system provides tracking and analytics of bills submitted by brokers on the various North American stock exchanges. The system is utilized by the Equities Controlling group. It provides a full range of reporting for periods of up to two years. The application is web based and is written in ASP with Oracle as the underlying database. The application is a fully automated data entry and reporting tool.



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## *Client Services*

Within the area of Client Services, our consultants have extensive experience in supporting securities lending and corporate actions and moderate experience in client reporting.

### **SLX – Securities Lending eXpress**

We partnered with our client and a US technology provider to create a custom global lending system. This application provides access to traders of real-time positions in their worldwide portfolio of securities. We created facilities on the client's UK systems to upload positions to the US-based SLX system.

#### **Implementation Approach**

The project was implemented via a phased design and development roll-out approach. Over a four year period, modules were added throughout the project to interface with the existing securities management and local lending control systems. Legacy systems in both the US and the UK were either functionally replaced or significantly enhanced by the interfaces to SLX.

The mainframe system primarily utilized Natural, COBOL, and JCL. Websphere messaging and Connect:Direct were central to the information flow between the UK and US systems, with batch jobs created to ensure the regular reconciliation of discrepancies. Test Director was used to support the testing components of the project.

#### **Functional Expertise**

Our expertise in the business knowledge of lending, as recognised by several team members gaining Securities Institute certification, enabled us to be closely involved in the user testing and acceptance phases of the project. A flexible approach enabled regular review and re-sizing of the development team to suit the needs of each phase of the project, as identified by the project manager.

### **COACS - Corporate Actions and Income Systems**

We became involved with Corporate Actions at our client, when they purchased another bank's Global Custody business. This acquisition represented a significant increase in our client's volume of business. While the COACS system was highly automated, much of the new business was processed manually. Consequently, our client needed to ensure that their system had the flexibility to handle the new functionality whilst avoiding manual intervention and subsequent increases in costs.

In order to achieve this goal, our team worked on-site with business users to scope out upgrade requirements to their existing Corporate Actions system, including functionality gaps, efficiency and risk management.

#### **Systems Upgrade**

Following the on-site study, we supplied a Project Manager and a team of 16 staff to develop, test and implement the required changes, adhering to the client's system development lifecycle. We managed the project and it was delivered successfully and on schedule. Much of the development involved improving the efficiency of the system and developing automated links in and out of the system utilising SWIFT messaging. The technology used was primarily Adabas/Natural and COBOL.

#### **Ongoing Work**

Following the success of the initial project, the team was retained to continue with a further series of initiatives on the Corporate Actions system and the related Income system. These projects have been driven by the continued growth in our client's Corporate Actions business, which has resulted in



increasing processing volumes together with new products and services. Additional work completed includes:

- improve the efficiency of the Corporate Actions system by performing straight-through processing
- provide workflow processing in the Income System
- support new products
- provide an increased level of audit reporting.
- give system access to clients via an internet front-end which provides an improved level of reporting and allows for the direct input of client instructions
- split the system to allow asset servicing for third party (non custody) holdings.

We are currently working on a project to interface the COACS system to the Securities Lending system to provide automated broker instructions.

### **Additional Corporate Actions Work**

On the eSpear project, we are responsible for the Corporate Actions Manager. This stand-alone component uses data from other eSpear components, such as Trades Manager and Positions & Balances, to automate Corporate Action processes that are currently manually intensive. Technologies utilized in this effort included Java, JSPs, EJBs, Servlets, HTML, Javascript, XML, Websphere, Oracle, Unix, and Shell script.

We provide 24 x 7 support of our client's Corporate Actions system. The team provides requirements gathering, analysis, coding and testing for system enhancements. The team also converted the firm's Greek assets that were maintained in this application to Euro. The application utilizes the following technologies: Natural, Adabas, JCL, and TSO.

### **Client Reporting – Development and Daily Support**

Our team led the design and implementation of two Windows-based applications, for the Client Money group at our client. The first system provides data maintenance, reporting and FTP export facilities for various bank account types. It also includes search and filtering facilities for most browse screen areas and built-in auditing for capturing and displaying user identities and timestamps against record updates.

We provided the client with the architecture and application design and completed the system's development. The application was developed in Visual Studio .NET using C#. We employed prototyping throughout the lifecycle and used a 'tiered' architecture approach. Sybase database access was provided via ADO.NET. For reporting, we leveraged Crystal Reports with XML schemas.

On the second project, we developed and implemented a re-engineered Windows-based application. This system gave the Client Money group data maintenance capabilities for various money classes and bank account types. This application was developed in Visual Studio using Visual Basic 6.0 and a 'tiered' architecture approach. Sybase database access was provided via ADO. We deployed the system using WinDist to avoid multi-client installations.



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## *Business Support*

Within the area of Business Support, our consultants have extensive experience in the Treasury arena. This work has been performed at one of our clients for more than six years.

### **Treasury – Development and Daily Support**

We have partnered with our client's Treasury department to develop and support their critical processing systems. Our primary focus has been on the Receivables Processing System (RPS) and the Mass Payments Router (MPR), which were built to support the department's core Funds Transfer System (FTS). This global treasury platform handles payment and credit processing into and out of the bank for the American, Canadian, South American, and Western European markets.

### **Rule-based Global Applications**

When designing both the Receivables Processing System and the Mass Payments Router, it was imperative that a generic processing structure be implemented that permitted country specific validations and functionality. This design has allowed both applications to be rapidly rolled-out to new countries, interface with local clearing systems, and meet central bank regulations. Key functions of the Receivables Processing System include:

- bulk processing of incoming high-volume non-urgent local clearing traffic, such as cheques, direct debits, credits, returns, etc.
- batch file inputs either directly from clearing houses or through partner banks
- online enquiry/processing functionality
- Intra-day customer and Nostro position reporting
- overnight generation of settlements including general ledger, current accounts, Nostro, wash, suspense and float, also overnight billing.

The Mass Payments Router, MPR, was developed to support International Automated Clearing House, IACH, traffic. MPR acts as a conduit for US based IACH transactions into various local clearing agencies. Outgoing items, such as Direct Debits, non-urgent payments, DD mandates/pre-notes and return/reject transaction processing, are all processed through the Mass Payments router. Our team has been heavily involved in the design, development, and roll-out of this global application. The system currently supports the South American, Western European, Central and Eastern European markets. Key functions of this system include:

- bulk processing of outgoing high-volume non-urgent local clearing traffic such as direct debits, non-urgent payments, DD mandates/pre notes, returns of incoming items etc.
- bulk processing of corresponding returns/rejects
- batch file outputs either directly to clearing house or through partner bank
- online enquiry function; return/reject input function.

### **International Roll-outs**

With a stable and flexible core application, our group then led numerous critical, international projects, three of which are briefly described here. The Frankfurt office's Treasury processing streams were migrated onto RPS, which improved the office's straight through processing rate from 60% to 95%. The group also successfully developed and implemented a high profile set of UK traffic via NatWest's partner bank TCAS. Finally, our team met tight, immovable deadlines to link into the new pan-European low-value Euro clearing (EBA Step2) environment.

Due to our excellent and dependable project work and longevity in the department, we are often turned to as 'in-house experts on various systems issues. Furthermore, our project managers and developers are viewed as partners to our client's business and technology staff.



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## *Management and Controls*

Financial institutions are finding that ensuring their compliance with various regulatory bodies is much more challenging than simply verifying a customer's address or watching for large wire transfers from mysterious foreign accounts. Rather, firms are discovering that real compliance is forcing them to take a good, long look at their business-reporting structure and IT architectures.

It is each Financial Institution's responsibility to obtain legal advice as to the identification and interpretation of any relevant laws that may affect their business or their clients; and to define any actions the financial institution may need to take to comply with such laws. We help our clients by providing Management and Control functionality through project deliverables.

The U.S. Congress signed the Sarbanes-Oxley Act into law on July 30, 2002. While some of the law's particulars are still evolving, the message is clear: improve your business's credibility by addressing the complexities of investor reporting — not to mention individual accountability and integrity.

On client engagements, our team's primary goal is to safeguard the client from regulatory actions. We focus on Examination, Investigation, Surveillance, Filing, Reporting services and Project Management. We support all US regulatory agencies, including SEC, NASD, and AMEX, worldwide client statement reporting, Preferred client reporting/auditing, US Tax reporting, Self Regulatory Organizations, Federal Reserve and State Regulatory agencies.

Within the area of Management and Controls, our consultants have led engagements and provided daily support at two different Investment Banks.

### **eSpear - Management & Control reporting**

In addition to the Clearance and Settlement functions that we support on the eSpear project, we also lead the Complex Business Reporting component. We have skilled business analysts, IT consultants/designers and project managers, located in the US and the UK, providing the client 18 hours of daily coverage. The team is proficient in database technologies, web development and reporting/repository toolsets, as well as electronic delivery mechanisms. Team members are well versed in Systems Development Life Cycle (SDLC) and utilize SDLC or the client's methodology to ensure that the project is delivered on time. Finally, our Project Managers are an integral part of our client's leadership team and help to drive the scope, direction, and completion of project deliverables.

### **Project Goals**

Our Complex Business Reporting team provides knowledgeable support staff for financial and regulatory reporting. The team was created with the following goals:

- improve the quality and consistency of financial management and regulatory reporting
- improve controls and reduce risk
- automate analysis, queries and reporting for our clients
- reduce dependency on spreadsheets and client based tactical systems through re-engineering
- provide methods and tools to facilitate management review
- help business users develop strategies to ensure compliance.

### **Key Reports Supported**

The team has supported, or is in the process of supporting, the design, development, and roll-out of numerous Management and Control reporting requirements. A subset of these requirements is briefly described in this section.



- Bluesheet system - supports requests from regulators to report trade activity for specific date ranges and on specific accounts. This system is critical, as regulators provide Financial Institutions only two weeks to respond and submit filings.
- Round Lot and Short Sales system - supports reporting to the New York Stock Exchange (NYSE) and the American Stock Exchange (AMEX). This system creates the Form 121, SS20, 1-RA, 1-S reports.
- Trade Activity Fee Report - calculates a monthly fee due to National Association of Securities Dealers (NASD). The report breaks down monthly trade activity and displays trades and the quantity traded by exchange and trade date.
- Securities and Exchange Commission Report - calculates a fee that is due to the Securities and Exchange Commission (SEC) each month. The fee is based on the firm's gross dollars of all trades across all US exchanges by a specified rate.

### **International Payroll – Development & Support**

We provide day to day support and application development for our client's London Payroll application and related processes. Key users include London Payroll accountants and processing controllers and the Human Resources department. The London Payroll department has financial liability for employees in the UK and Europe, as well as several Far East based employees. The group has overall headcount coverage of approximately 6,000 employees.

Payroll functionality is provided by the vendor system, ADP, and applications that our team has developed. Employee payments are distributed by ADP. We extract data from ADP into the London-based Payroll systems and send these transactions to the General Ledger. We have implemented complex rules based on employee status and payment requirements that relate to multi-country processing and inter-company charging procedures.

### **Reconciliation and Flexible Reporting**

The payroll transaction system provides the Payroll and HR departments with a vast range of automated reporting functions. Business users reconcile ADP payments made to employees and the government, against General Ledger entries. Financial reporting functionality for both internal and external sources is available through an ad-hoc reporting tool that we developed. The application downloads mainframe source data to Sybase tables and generates reports through a Business Objects front-end. This application enables the controllers to provide both current and historical information wherever it is required, to both employees and management.

Besides receiving data from ADP, the application also receives data from the Peoplesoft HR application, numerous European vendors, and various other adhoc processes. All data is loaded into ADABAS files and is used to enrich basic extracts to provide full reporting capabilities. This process also avoids the need for data replication.

### **Batch Support**

We support the department through monthly, quarterly and annual batch processing, as well as any ad-hoc requirements. We liaise directly with the IT components of the US and Far East payroll groups, to ensure that data is compatible across applications. We also provide the payroll department with support for a web based overtime entry system.

We manage the annual processing for the provision of data to the UK's Inland Revenue department on behalf of the employers and employees, such as p11d's. We ensure data is available for controllers' legally required number of years.



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## *Other (Global Custody)*

We provided production and application support for our client's custom Global Custody application in the US, Argentina, UK, and Singapore. This multi-year support ended when the business was sold to State Street Bank in mid-2003. Our team had responsibility for maintaining programs, investigating and resolving issues, and writing both Functional and Technical Specifications for new projects. Our 24x7 Production Support team was responsible for monitoring end-of-day processing and researching problems encountered by the clients. Our team was heavily involved in the transition of our US Wang application to the updated dbTrader Unix platform.

The Custody system interfaced with several vendor applications. We fed and accepted feeds from outside systems such as IDSI and DTC. Instructions, confirmations and statements were provided to and received from, custodians and sub-custodians via SWIFT. During the SWIFT ISO15022 transition, the Mercator system was used to translate messages into the new format until the custody programs could be revised.

A XML database was developed for Custody which was fed from multiple systems. Events were published real time from this database for all subscribing systems. Some of the information included was trade and position information, static data, and corporate action events.



## Appendix

In this section, we have provided several Project Profiles of work we have completed at various Investment Banking clients.

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| <b>Project Type:</b> Production Support      | <b>Client Industry:</b> Investment Banking |
| <b>Technologies:</b> Java, Oracle, Websphere | <b>Implementation Type:</b> Near shore     |

### The Situation

Deutsche Bank had staffed the eSpear Production Support group with a team who had no prior IT experience. The group had Operations backgrounds only. Our client knew that these people were good at their current job, but soon learned that a good Operations employee does not necessarily make a good Production Support analyst. Within six months, the original client team was replaced with a team of 8 Strategic Systems Solutions employees. The key problems that our team faced were that there was no support model and the application was extremely unstable.

### Challenge – No support model

The original Production Support team faced several issues including being fragmented across offices, not enforcing a central mechanism for reporting problems, and not maintaining a clear inventory of the systems that the team supported. In an attempt to provide global coverage, our client had implemented a ‘follow the sun’ model. Team members were located in various offices around the globe. When problems arose with the application, users could call a central number, but preferred instead to call support personnel directly or to send emails. The client’s Issue Tracking system was used as an afterthought, at best.

We implemented a 24 X 7 production support coverage model that is delivered from one location, our Newcastle office in England. The team is led by a seasoned Production Support manager and is staffed with developers and DBAs. Clear communication was provided to the various user groups that problems would only be addressed if they were submitted through the central call in number or through the Issue Tracking application. Key contacts were also set-up for each business line where status could be communicated on urgent production problems.

### Challenge – Unstable application

The Production Support team soon discovered that application code was routinely migrated into production with expected manual workarounds or without being properly tested. The client deemed time consuming nightly manual workarounds as a necessary evil to keeping pace with aggressive roll-out schedules.

After the infrastructure and procedures supporting our Production Support team were in place, the team began tackling problems in the application itself. Production jobs that routinely failed or required extensive manual support were addressed first. The team also developed a set of required documentation and associated steps that developers must complete before promoting code to production. In the current environment, the Production Support team has an in-depth understanding of the Production environment and can offer suggestions to application developers and upstream systems feeding the application.

### Current State

The team has grown to 18 people with 4 focusing on issue administration, 9 application specialists performing maintenance support, and 4 DBAs providing database support. The group provides Management Information reports to the project’s management team and to the business users.



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### **General System Description**

- Global settlement system – European, US, and Asian implementations
- Web browser based - work flow / event driven philosophy
- 24x7x365 operation – high availability, STP
- \$100million annual budget
- 380 staff across UK, US, Asia
- 100+ SSS staff with 18 on this Production Support team.

### **Processing Stats**

- 1,400+ daily batch jobs. The weekly process kicks off on Sunday at 10pm BST and run through midday on Saturday afternoon.
- 450+ intra day processes.
- ~300,000 US trades processed per night.
- 1,500 users (multi-language) based in London, NYC, Sydney, Tokyo, Hong Kong.
- 6-10 code production migrations each night, major Go Lives every 6-8 weeks.
- Weekend support includes routine Production code migrations and Disaster Recovery dress rehearsals.

### **Supported Application Details**

- Web Technologies: XML, EJB, Servlets, JSP, Javascript, ASP, HTML
- Databases: Oracle, Sybase, SQL Server,
- Platforms: Websphere, Weblogic, Unix
- Open Source: JBoss, Struts
- Other: C++, Vitria, FTI, Mercator, Corba

### **Support Tools**

- Batch Scheduler: Autosys
- Issue Escalation/Contact: Client Issue Tracker Application, Client Internal Hotline Number, Beepers



**Project Type:** Production Support

**Client Industry:** Investment Banking

**Technologies:** Perl, C++, Unix

**Implementation Type:** Near Shore

### **The Situation**

Our client wanted to move the production support of several vendor-provided market data feeds to a co-sourcing partner. We were chosen to provide this service and a team of four people was set-up in our Newcastle, England office. It was soon evident that the market data processing stream needed to be modified to improve overall controls both within the processing stream and at a project support level. As the support requirements grew, the team was also charged with providing a wide range of functional area and time coverage support, while maintaining a fairly small team.

### **Challenge – Minimal controls and inefficient processing stream**

The client's processing stream was managed through cron jobs and there were few means to get an overall sense of how the nightly stream was progressing. Also, only a few jobs would provide a notification to the support team if it failed to complete successfully. To compound these problems, many jobs had significant performance issues. Finally, most programs had no data integrity checks and would allow invalid data to be loaded into the market data tables.

Our team implemented the batch scheduler AutoSys, which dramatically improved the group's control over the processing stream. When jobs failed, beeper notifications were sent to the appropriate team member on support. And finally, various web tools were developed to ensure that data was cleansed properly.

### **Challenge – No support model**

The client had a complex set of market data requirements that needed to be supported in a 24 X 7 manner. The team's responsibilities included batch support and general job development/maintenance. The client wanted a cost-efficient means of providing this support while still providing high quality service to the user community.

The SSS team organized the Market Data batch jobs into five 'specialist' functional areas. Each functional area has two to four systems 'specialists' who perform the detailed job development/maintenance. Finally, the group is divided into four 'support groups' of three people each. Each support group has a mix of functional specialists. When a problem is raised, it is expected that a 'non-specialist' will be able to support the job stream if an appropriate specialist is not in the office. With this structure, the team can keep the number of development staff to a minimum (typically two per functional area) while still providing 24 X 7 production support coverage.

### **Challenge – Minimal coordination between developers**

The client had no single point of contact for the Market Data feeds. Individual developers supported their own specific code and rarely worked with other developers to implement a consistent solution to production problems.

The Market Data team immediately began using the client's Issue Tracking system as the main repository of batch problems. Then as issues are raised across groups, they are discussed as a team to determine if there is a common source problem. For example, if there was an ftp firewall issue, the team will fix the root problem and prevent a more widespread issue from developing.

### **Current State**

After the first set of feeds were rewritten and stabilized, additional feeds and systems have been added to the team's support responsibilities. Currently, the team has 12 people which provide 24 X 7 support



for the various categories of market data. The group provides global coverage and interacts with support groups in the Far East, Europe, and US (east and west coast coverage).

### **General System Description**

Support of daily loads of the following market data from external vendors:

- GIM - 723 traded indices comprising 140,122 components
- MSCI - 559 traded indices comprising 91,017 components
- SectorWatch - 424,213 sector products from 11 industry sources
- Corporate Actions - 8 vendors with approximately 446,000 notifications
- Reuters Real Time Product App - referential data for approximately 1 million products
- Options Clearing Corp – approximately 150,000 options with spikes on expiration weekends
- Bloomberg - 1 million Fixed Income securities and 293,000 Equity securities
- Fitch Ratings - 515,000 securities
- S&P Ratings - 135,000 securities
- Moodys - 197,000 securities
- FT Interactive - indicative data for 1.5 million municipal bonds
- Trepp - indicative data for 222,000 municipal bonds
- DTC - indicative data for 2.8 million securities
- Logical Information Machines (LIM) XMIM Loader - 3,000 customized products (e.g., oil and gas prices) and calculates firm-wide ValueAtRisk.

### **General Processing Stats**

- GIM Loader runs six times a day and can run on an ad-hoc basis.
- MSCI runs three times a day (Far East, Europe, North America).
- All other loaders run once daily.

### **Supported Application Details**

- Languages: ksh scripts, Perl, CGI Perl, C, C++
- Database: Sybase
- Platforms: SUN Unix

### **Support Tools**

- Batch Scheduler: Autosys and Netcool.
- Issue Escalation/Contact: Client Issue Tracker Application, Client internal and external Hotline numbers, Beepers, Mobile phone. Staff on call and contact numbers are published on the Support Intranet page.
- Database Access: through standard Sybase tools, e.g. fsql, isql, wisql, PL/SQL. The team has also provided Web based tools to allow users "controlled" access to the database.
- Client Network Access: via MS LAN in the SSS office then staff laptops are RAS/VPN enabled for home usage.



**Project Type:** Post Merger Integration

**Client Industry:** Investment Banking

**Technologies:** Natural, Adabas, Mainframe

**Implementation Type:** On-site and Near-shore

### **The Situation**

Our Financial Services client, acquired an international Investment Bank, and needed to integrate the acquired firm's General Ledger processing stream into its own. The project was complex due to the large number of international offices and numerous different systems that fed the Investment Bank's General Ledger. The project was also high profile, since our client announced an implementation date to the NYSE and the press for when it planned to merge the books of the two firms. A team of 8 SSS personnel, a project lead and 7 analyst/programmers, were selected to support this effort. The team worked alongside the client team of 5.

### **Challenge – Complex environment**

The project scope included four international locations (London, Paris, Johannesburg and UK Subsidiaries) and 14 feeder systems, each using different GL interface templates. The team developed over 200 feeds to support the merger. The team worked with a new set of users who had different business rules, technologies and working practices than the 'parent' investment bank. The technologies, such as Unix, Windows, AS/400 and Mainframe, added further complexity with regard to data transfer and data conversion.

The SSS team first wrote detailed requirements based on the high level requirements received from the client. This process raised numerous issues which were resolved through user meetings, emails, and conference calls. Based on the final requirements, an Adabas-Natural mapping system was written, which runs off of user-maintained rules. The system takes an unlimited number of pre-defined inbound formats and maps them to the required G/L outbound format.

SSS developed several audit and exception reports and downloads to assist in the day to day running of the system. These reports highlight any data items that could not be mapped and have therefore been defaulted by the system. SSS also developed automated rule uploads written in Visual Basic. This tool allowed users to maintain rules locally on a PC and then upload them to the mainframe. This process saved our client significant time, as the PC allowed flexible maintenance and analysis before the final upload to the mainframe.

Another complexity in this environment was the inclusion of the Turkish Lira (TRL). This currency is infamous for its high exchange rate and often many systems cannot cope with the large number of significant digits. Some systems get around this issue by holding the amount against an alternative currency such as USD. The system was developed to support receiving large TRL values in various formats and mapping them accordingly.

### **Challenge - Aggressive, fixed implementation date**

As stated earlier, the Implementation date for this project was seen as a market event. If this date was delayed there would have been significant negative press published about our client. To ensure that the Merger team met its deadlines, the team changed its traditional working style.

SSS implemented a shift pattern covering 18 hours per day. Many team members often worked longer hours to achieve the project goals. The team worked on site at the Investment Bank and were also on-call via pager/phone. Through this effort, the Merger team was able to successfully participate in three User Acceptance Tests, three Implementation Dress rehearsals, and was ready for the ultimate Implementation date.



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## **Current State**

The implementation went smoothly on the Go Live date that had been set one year earlier. The system is still running daily in Production across 4 locations and with over 220 feeds in place. The solution was so flexible that it is now being used as the mapping software for other new projects.

## **General System Description**

The SSS team developed mapping software that allowed the acquired firm's feeder systems to interface with our client's General Ledger. The team provided file capture, reference tables, and mapping logic to deliver the target system files for multiple locations. The software managed and controlled the associated file transfers between platforms.

Key functionality of the application included the following:

- Batch Update of Mapping Tables
- Conversion Extracts
- Formatting/Reformatting, i.e. Unpacked/Packed
- Wrapping of Data, i.e. Dates
- Mapping of Data, i.e. GL Account Numbers
- Calculation/Recalculation of Amounts, i.e. TRL values, USD Equivalents
- Reporting: Maintenance, Exceptions, Reconciliation, etc.
- Online Maintenance and Enquiry of Mapping Tables and additional data
- Creation of Records & Reversing Records due to differences in accounting policies
- Splitting/Combining Records, i.e. Contact level to constituent parts - Principal Accrued Interest, etc. or vice versa

## **Processing Stats**

- 200+ feeder systems
- Daily records processed (postings)
- Initial conversion of GL (all locations) : ~400,000 postings
- Post Conversion, average night (all locations, all feeder systems) : ~1,000,000 postings

## **Application Details**

- Languages: Natural & COBOL
- Database: Adabas and QSAM
- Platforms: Mainframe and PC (rule maintenance)